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# UK Patent Application (19) GB (11) 2 071 502 A

(21) Application No 8107793  
(22) Date of filing 12 Mar 1981

(30) Priority data

(31) 80/08772

(32) 14 Mar 1980

(33) United Kingdom (GB)

(43) Application published  
23 Sep 1981

(51) INT CL<sup>3</sup>  
A61B 17/02

(52) Domestic classification  
A5R EY

(56) Documents cited  
GB 294763

(58) Field of search  
A5R

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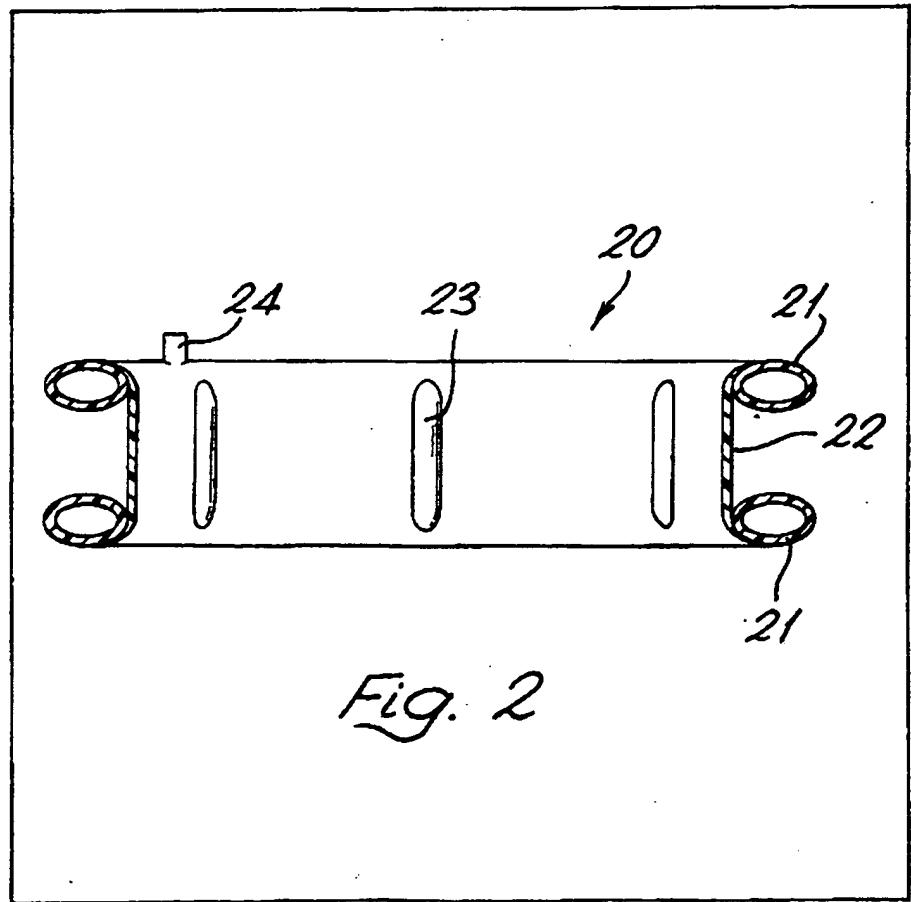
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## (54) Surgical retractors

(57) Surgical retractors conventionally involve metal jaws used to apply force in a localised manner within the overall periphery of an operation site and this gives rise to several difficulties. It is now proposed that a surgical retractor comprise a flexible closed loop member (20) locatable in an initially compacted form in the incised site and at least partially inflatable to expand into an apertured configuration opening the site and

exposing the interior thereof. The member suitably has a concave cross-sectional radially outer profile, which can be provided, for example, by the use of two annular inflatable portions (21) interconnected by a radially inner web (22), these portions conveniently being communicated by tubes (23) to facilitate inflation. Also the member may be structurally constrained, such as by suitable reinforcement, to form an elongated configuration to suit a common form of operation site.



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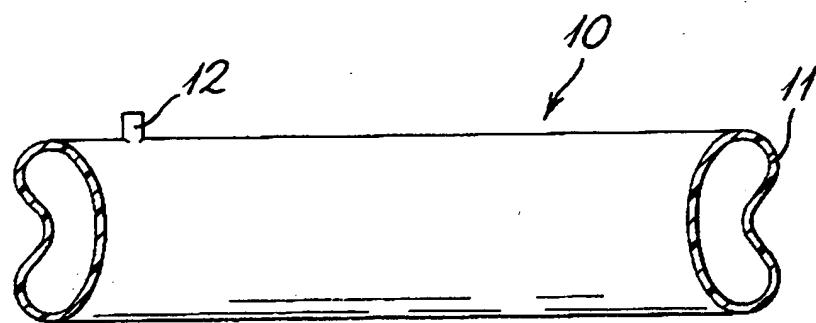


Fig. 1

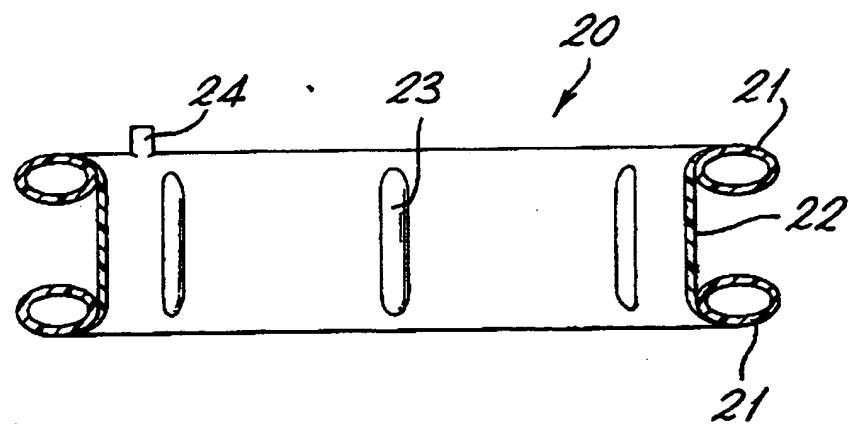


Fig. 2

## SPECIFICATION

## Surgical retractors

5 This invention concerns surgical retractors and more particularly such retractors suitable for holding back tissue to expose an operation site following incision.

10 Conventionally, retractors of the kind in question involve metal jaw members and their use is such as to apply force in a localised manner within the overall periphery of the operation site. Such localised application of force commonly results in high pressure on the engaged tissue, which can quickly lead to pressure necrosis. While it may appear that this difficulty could be resolved by the use of additional retractors to distribute the retraction force and so reduce the pressure on the tissue, this solution is unattractive because of the consequent added complexity in terms of retractor equipment and the related anchorage therefor, and/or the necessary additional personnel to handle the equipment.

15 An object of the present invention is to provide an alternative, more acceptable solution and this is achieved by the use of a flexible closed loop member locatable in an initially compacted form in an incised body location and at least partially inflatable to expand into an apertured configuration opening said location to expose the interior thereof.

20 In its simplest form the proposed member may comprise a single tubular structure with, of course, a suitable valve mechanism allowing inflation and deflation. In practice such a structure is preferably formed to have a concave cross-sectional profile

25 radially outwardly of its apertured configuration to locate around, and possibly grip, the tissue held back thereby. This measure will reduce any natural tendency for the member to spring out of its location in use.

30 In another form the member may comprise a plurality of inflatable portions. For example, the above-mentioned concave profile can be produced by two inflatable portions defining, when inflated, similar respective apertured configurations held in super-

35 posed relation by a radially inner interconnecting web.

40 These forms of the invention are respectively schematically illustrated, by way of example, in cross-sectional views of inflated conditions in Figures 1 and 2 of the accompanying drawings.

45 Figure 1 shows a closed loop member 10 comprising a single tubular structure 11 having a valve mechanism 12 to allow pneumatic inflation and deflation. The structure 11 is suitably made of an elastic material so that it can conform to the peripheries of differently shaped sites. Also, the structure 11 is seen to have a radially-outermost concave cross-sectional profile to locate around the tissue at such a periphery as mentioned above. This

50 profile can result from appropriate variation of the elasticity of the structure or in any other suitable manner. In addition, suitably orientated reinforcement or some other structural formation may be employed to conform the member to an elongated shape when inflated to suit the corresponding com-

mon form of operation site.

55 Figure 2 shows a different closed loop member 20 having two inflated tubular portions 21 defining, when inflated, similar respective apertured configurations. These portions are interconnected in superposed relation by a web 22 around their radially inner peripheries. As in Figure 1, the portions 21 are suitably of elastic material, and so also may be the web 22. The member 20 will naturally tend to provide a concave outer profile as in Figure 1, but the portions 21 and/or the web 22 may be specially formed to ensure this result. Also, conformation to an elongated shape may be appropriate.

60 Regarding inflation: separate valves may be provided for the portions 21, but inter-communication of these portions by small tubes 23 may be preferred to allow the use of a single valve 24 for simultaneous inflation.

65 While the present invention has been relatively briefly described, it will be appreciated that it is open to variation within the initial broader expression thereof above. Clearly the structural form of the relevant retractor device can be varied, as can the resultant shape when inflated and the inflation arrangement, and other variations are possible. For example, while inflation will normally be pneumatic, this is not essential and liquid or other inflation media may be used. In particular, inflation with a resilient foam material from an aerosol-type dispenser, similar to those for emergency vehicle tyre inflation, may be appropriate and such a dispenser might conveniently be provided with an inflatable structure in a sterile package.

## CLAIMS

70 1. A surgical retractor comprising a flexible closed loop member locatable in an initially compacted form in an incised body location and at least partially inflatable to expand into an apertured configuration opening said location to expose the interior thereof.

75 2. A retractor according to Claim 1 wherein said member is formed to have, when inflated, a generally concave cross-sectional profile radially outwardly of its apertured configuration.

80 3. A retractor according to Claim 1 or 2 wherein said member comprises a plurality of inflatable portions.

85 4. A retractor according to Claims 2 and 3 wherein said member comprises two inflatable portions defining, when inflated, similar respective apertured configurations held in superposed relation by a radially inner interconnecting web.

90 5. A retractor according to Claim 4 wherein said member comprises a plurality of tubular formations communicating said inflatable portions.

95 6. A retractor according to any preceding claim wherein said member is structurally constrained to expand, when inflated, into an apertured configuration of elongated form.

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